THE MOTOR AGE

THE AUTOMOBILE AUTHORITY OF AMERICA

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LEADING CONTENTS

FRENCH CONSUMPTION COMPETITION

AN INTERESTING TRIAL IN WHICH AWARDS ARE MADE ON THE BASIS OF THE MINIMUM AMOUNT OF FUEL CONSUMED BY GASOLENE VEHICLES—OTHER FRENCH NEWS

Paris, Nov. 20.—The motor vehicle is getting so fairly democratic here in France and has taken so deep root as a practical mode of locomotion that a competition for a minimum fuel consumption was started by the new sporting daily, the Auto-Velo, which deserves congratulation on the huge success of this, its first attempt at anything of the kind. There were no less than 112 entries, of which number ninety-five started and ninety finished the event.

The chief honor for successfully working up the scheme is due to Georges Prade, who organized and supervised the event, personally measuring the gasolene consumed. And it was the work of a Trojan to fill the tanks, liter by liter.

No competition more practical in its results could be wished for, as it was based on the consumption of gasolene by motor vehicles traveling at normal speed. The course was from Suresnes, near Paris, to Meulan and back, a distance of seventy kilometers (43.497 miles).

The gasolene tanks were filled full at starting and sealed with lead. A maxi-

mum speed of thirty kilometers (about eighteen and one-half miles) was made compulsory. with a minimum of fifteen kilometers. At the finish the seals were removed and gasolene poured into the tanks, liter by liter, with a graduated measure, until they were full, the amount introduced representing the consumption for the seventy kilometers.

A Judge for Each Vehicle

Each car was obliged to carry, in addition to its driver, a "commissioner" or judge, to prevent the possibility of any fraud, such as filling up the tank. The writer had the privilege of being seated in a six-seated Delahaye vehicle, weighing considerably more than a ton can be propelled for over forty-three miles with a little more than a gallon and a half of gasolene, which costs here in Paris ten cents a liter (or a little less than a quart) the possibilities of automobiles as an economic factor are marvelous. The tables are, for convenience, reduced to their American equivalents.

Touring Becoming Popular

The Automobile Club and the Moto Club are beginning to encourage a spirit of "tourism" among their members, who have perhaps received a surfeit of racing during the past few years, and now that the sport has been rather overdone

Vehicles Over 2,200 Pounds

Order in Competition.	Competing vehicle.	Gasoline Consumption In Quarts.	Weight in pounds.	Time.	Number of passengers.
1.	Delahaye	6.16	2233	3:00:10	2
2.	Delahaye	6.80	2266	2:58:45	2
3.	Pinson (Panhard)	7.39	2444	2:36:22	4
4.	Schaffer (Panhard)	7.61	2420	2:36:22	2
5.	Gobron Brille	*8.80	2431	2:40:37	2

* Alcohol.

Vehicles from 1,540 to 2,200 Pounds

1.	George Richard	5.63	1782	3:07:15	2
2.	Mors	5.94	1960	2:26:34	2
3.	Vigneaux	5.34	1771	2:37:05	2
4.	Panhard and Levassor	6.40	1991	2:26:36	2

Vehicles from 880 to 1,540 Pounds

1.	Delahaye	4.40	1155	3:06:27	2
2.	Clement	4.62	946	2:48:00	2
3.	Noe Boyer	4.62	924	2:37:05	2
4.	Creanche	4.71	1034	4:42:50	2
5.	Clement	4.74	92;	3:05:11	2

Vehicles from 550 to 880 Pounds

1.	George Richard	3.17	660	3:00:41	2
2.	Denesio (Corre)	3.70	638	2:37:11	2
3.	DeDion-Bouton	4.40	825	2:49:03	2
4.	Dardard (Gladiator)	4.40	671	3:11:30	2
5.	Perisse (G. Richard)	4.40	704	3:33:57	2

Vehicles Under 550 Pounds

1.	De Boisse	1.97	473	3:33:51	2
2.	Campagne	3.26	473	3:22:53	2
3.	Gladiator	3.43	539	2:54:26	2
4.	Gladiator	**5.19	539	2:37:20	2

** Accident to tank.

Quadricycles

1.	Cormier (De Dion motor)	1.45	363	3:16:57	2
2.	Marot	1.97	528	3:00:20	2
3.	Reculez	2.60	429	3:30:42	2
4.	Deckert	2.99	396	3:00:38	2
5.	L'Energie	3.62	440	2:22:03	2

ing more than 2,500 pounds, which worked splendidly all the way. The chauffeur was L. Perrin, the engineer of the firm, who proved to be as agreeable a road companion as one could wish to have. No incidents of any note marked the progress of the vehicle. At the conclusion of the event all were surprised at the small consumption of fuel.

Divided into Classes

The tables herewith give the best five performances in each class, for the event was divided in the usual manner into classes, according to weight and carrying capacity. By consulting these tables one can gain an idea of the economic possibilities ahead of automobilism. When it is considered that a vehicle it is found desirable to replace most of the races by trials and tours—the one for the benefit of the industry and the other for the pleasure of the autocar owners. It is obvious that with the increase in the number of vehicles the tourists must form a larger body than the racing chauffeurs, who, by the way, have been somewhat eclipsed during the past season by the difficulty of organizing speed tests, and as automobilists are a gregarious class they have been complaining that they have not had sufficient opportunities for taking runs together.

The Automobile Club started a series of suburban runs last spring, which were very successful, and it is now pro-

posed to organize several long tours. The Moto Club has been considering the advisability of promoting a 1,000-kilometer run, the idea being at first to make a tour around France, but as this would have certain inconveniences for some of the members it is probable that there will be a circular run within a hundred miles radius of Paris, so that those who may be obliged to leave the caravan will be able to return home with little loss of time.

An African Tour

The Automobile Club has organized a "promenade" in North Africa, which will start on February 24 from Tunis and will make a tour around the Protectorate by easy stages, and the members will leave Tunis for Marseilles on March 16. The tour will be varied by excursions and visits, and races will be organized between Gabes and Tunis and Gabes and Sfax. This will provide an excellent opportunity for automobilists to explore Tunis thoroughly. The whole of the expenses, excluding the cost of gasolene, are expected to be less than $80.

A Journey to Nice

Another caravan will be organized for those who intend going down from Paris to Nice by road on the occasion of the annual fetes next spring. Each member of the caravan will receive a diploma in the event of his covering the full distance, and as the caravan will be accompanied by vehicles containing repairing materials, there is no reason why any one should lose time on the road, and it is probable that there will be as many awards as there are members. An interesting feature about this run is that it is proposed to create a special journal giving a full account of the proceedings, and as only one issue will be published and its circulation strictly limited to the members taking part in the caravan, this journalistic venture will be unique in the annals of automobilism. It will not only be interesting as a souvenir of the run, but may be expected to acquire a certain intrinsic value.

The January Show

There have been a great many difficulties in connection with the holding of the annual autocar show, and at one time it seemed as if the differences between the Automobile Club and the Syndicat du Cycle et de l'Automobile were so great that there was very little likelihood of them being smoothed over, but after many futile attempts an understanding has at length been arrived at for joining forces and organizing a single show. It is obvious that two shows would have been a disaster, especially coming after the Paris Exhibition, where makers were put to considerable expense in showing vehicles without getting an adequate business return. It is very probable that one would be a success where two could hardly be otherwise than failures. Under the patronage of the Automobile Club there can be no doubt that the forthcoming salon will be as popular as the previous ones.

Trouble Over Dates

At first it was proposed to hold the show on January 15, but as the Grand Palais in the Champs Elysees will not be free then it has been decided to postpone the opening until January 21. A delegate has this week called upon the president of the republic in order to invite his attendance at the opening ceremony. The president, who was recently initiated as a chauffeur in a Jeantaud electric vehicle, expressed his desire to visit the forthcoming salon, and thus show his appreciation of the new industry, which was able to create such a popular success during the recent automobile fete.

President is Interested

The delegates also pointed out to the president the great influence which the automobile was bound to have on the agricultural industry as the result of the employment of alcohol, and thus the autocar was specially deserving of all the support and encouragement that could be given to it. With reference to this question of alcohol it may be stated that the government has already taken certain measures to facilitate its use, and now that all the agricultural bodies are agitating for the suppression of the duties there is no doubt that the government will before long see a means of cheapening this spirit.

As is well known, a company has for

some months past been running a service of Peugeot four-wheeled cabs, with which they seem to have done extremely well during the exhibition, when the drivers were able to fix their own prices and reap a big harvest so long as they were patronized by foreign visitors. The fares were so heavy that complaints were made to the prefect of police, and he has now decided that the gasolene cabs are to be assimilated with the ordinary vehicles, so that the fares will be the same in both cases. This ought to be an advantage to the company, who will certainly be able to get much more custom for their cabs—the more so as the experience of the past six months has shown that they are in every way speedier, safer and more convenient than the average type of Parisian horse-drawn cab.

The company has now introduced a new type of delivery wagon. It consists of the same Peugeot underframe with the sledgelike front, which is characteristic of the company's vehicles, but the carriage body is replaced by a light van. These wagons are being rented out to tradespeople, and if the enterprise should prove a paying one it will probably be extended on a very large scale. The new wagons are painted red in the same way as the cabs and are very smart and taking vehicles.

ONEIDA AUTOMOBILE CO.'S ENGINE

The new motor for steam carriages just being placed on the market by the Oneida Automobile Co. of Oneida, N. Y., possesses some new and very desirable features. It dispenses with the link motion, the eccentrics and eccentric rods, as well as the slide valves, and in dispensing with these, according to the makers, it dispenses with a large amount of friction as well as with the annoyance of constantly wearing and loosening parts, which, if not replaced, are constantly rattling and wearing upon the user's nerves. The steam valve, of which there is but one, is a hollow cylinder, and the steam, being on the inside of it and pressing in all directions, makes it a balanced valve. It does not reciprocate or oscillate like a piston valve, but instead of either of these motions it rotates constantly in one direction, except when the motor is reversed, and then it rotates in the opposite direction. By referring to the accompanying illustrations it will be seen that the steam enters the valve at both ends and through the steam ports is admitted alternately to the four ends of the steam cylinders and in turn is exhausted by slots in the sides of the valve to the center of the steam chest in the side of which is screwed the exhaust pipe.

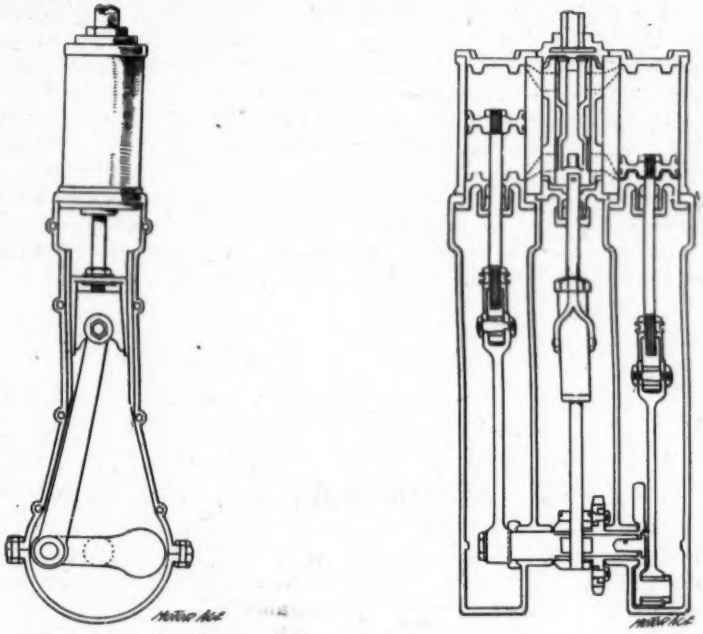
The valve stem is rotated by a spiral gear on the crank shaft. By referring again to the illustrations a small rod will be seen in front of the steam chest. This rod is used to reverse the motor. At its lower extremity it is attached to a yoke that encircles a sleeve, which sleeve in turn encircles the valve stem. This valve stem is in two parts, being divided inside the sleeve, and each part has a small stud projection on one side, near the end, at the division, while the encircling sleeve has two spiral grooves to fit over these two studs, so that if the sleeve is either elevated or depressed it will rotate the upper part of the stem, which is attached to the valve, and so rotate the valve, bringing the exhaust port where the live steam port would have been if the sleeve had been neither raised nor lowered, and in thus changing the ports the steam will be admitted to the opposite ends of the cylinders and the motor will run in the opposite direction.

The valve being one single piece of metal, the operation is very positive, and

the liability of getting out of order is thus obviated.

These radical changes are all in the line of simplicity and with the improvements noted below, the makers claim, make the "Oneida" the ideal motor for automobile purposes.

The method of taking up wear in the cross heads and in the crank pins is extremely simple, as will be seen by referring to the illustrations, and last, but not least, the frame entirely incases the working parts, protecting them from dust and at the same time affording an oil pocket in which the cranks dash and throw the oil upon the vital parts of the machine. The company say that they intend to produce the best motor on the market regardless of what it costs to produce it.



SIDE VIEW AND SECTIONAL VIEW OF THE ONEIDA ENGINE

PRODUCTION OF WINTON CARRIAGES

AN ILLUSTRATED DESCRIPTION OF THE HOME OF THE FAMOUS WINTON VEHICLES—WONDERFUL GROWTH OF THE CONCERN IN THE PAST FOUR YEARS.

One of the finest monuments to the automobile industry in America is the extensive manufacturing establishment of the Winton Motor Carriage Co., in Cleveland.

As is generally known, Alexander Winton, president of the company and famous throughout the country as a daring and successful racing man, was one of the first to experiment with the internal combustion engine for traction purposes. And while he has never ceased to experiment it is now more than four years since he completed a successful vehicle and about three years ago that his company commenced producing practical vehicles for the market. Compare its present magnitude with the conditions which existed three years ago and a casual observer will at once appreciate the wonderful progress made by this pioneer gasolene vehicle manufacturing company.

Winton's Early Experiments

Mr. Winton commenced his early experiments in a small room in the enormous plant which had just previously been vacated by the Brush Electric Co. The Winton company still holds this location, but instead of one room the Winton factory includes the major portion of the plant and bids fair to acquire the entire establishment for its own work. In all there are several hundred thousand square feet included in three large buildings.

All Built in One Factory

Mr. Winton's early experiences in the bicycle business taught him that the most satisfactory machine could be produced by manufacturing everything himself and he has strictly held to this policy in the manufacture of the Winton carriage. In the production of certain parts this is undoubtedly an expensive method, since they can now be purchased from specialists, but it insures a factory-built machine—one which the Winton people can stand back of as being of strictly first class workmanship throughout. For instance, all hubs are turned on the company's own screw machines. There is a foundry for brass castings and heavy presses for punching out chain parts. Winton spokes are home production as are all cups, cones, nuts, bolts, gears, etc. In fact practically the only parts built outside of the company's factory are the tires and heavy steel castings.

A Tour of the Factory

A Motor Age representative recently had the pleasure of being shown through the entire factory by Advertising Manager C. B. Shanks. Going first to the drafting room he found Mr. Winton directing some special work. While he occasionally finds time for a flying trip through the country, this worthy gentleman generally puts in ten hours each day at the factory, and is ever figuring on some way of improving the details of his machines. It is needless to say that he is responsible for all past creations of the company, and, having a thorough knowledge of all lines of mechanics, is able to direct all movements so that results may be accomplished in the most practical manner possible.

An Immense Machine Shop

The machine shop occupying both wings of the main building is one of the largest and most completely equipped in this section. The vast quantity of new machinery stands for everything that is modern in special appliances for manufacturing high grade vehicles.

The assembling and erecting room occupies the center of the main building. This portion of the building is very high with arched roof giving excellent light and a clear space for conveying heavy castings and finished parts from one end of the building to the other, by means of traveling cranes. A portion of the as-

sembling and erecting room is illustrated.

A Busy Floor

This floor is never idle. There were perhaps thirty vehicles represented in every stage of construction the day the writer visited the factory. Some were indicated only by frames while others were "up" and undergoing test. As fast as a motor is finished and taken from the floor to the assembling pits, where the body and running gear are fitted, frames for new motors are set. In this way there is always a quantity of motors to be seen on the floor. The pattern room occupies a wing of the main building, as do the copper and tinsmith departments.

THE ASSEMBLING ROOM.

Where Bodies are Made

Up stairs in the main building are the departments where bodies are built, known as the wood working department, the carriage trimming and leatherwork department, the upholstering department, the wheel building department, and the paint and varnish shop and finishing department, each of these occupying separate rooms. In one room on the second floor are stored several pioneer Wintons, including the first experimental machine which startled Clevelanders several years ago by making an exhibition mile in less than two minutes. Needless to say, they little resemble the handsome and safe phaetons which the company is now producing every day.

The Blacksmith Shop

The blacksmith shop occupies a separate building. Here there is a heavy drop hammer for producing the heaviest forgings, although much of the structural work is turned out by hand. Beyond the forge shop is the foundry, where all the brass castings used in the carriage construction are made. The tool room is a separate portion of the main building. Here some of the finest mechanics in the

DEPARTMENTS OF THE WINTON FACTORY.

business are engaged upon their fine line of work.

The repair department is a small shop in itself and repair work is given immediate attention without disturbing the routine of the factory. The experimental department is also a separate institution and on the door entering this is posted a conspicuous notice "Positively No Admittance." This is the forbidden city and yours truly did not even get a look inside.

There are still other departments for nickeling, enameling, annealing and other detail work. Altogether the factory is complete in itself with capacity sufficient for present demands. Winton vehicles are delivered almost upon receipt of order, which can be said of perhaps no other factory in the country.

Appreciating the advantage to their eastern trade, of a regularly equipped branch of the factory in New York city under their own supervision, the company will shortly open a salesroom for carriages and parts, and a storage depot exclusively for Winton carriages. In connection, they will equip a repair department under a competent superintendent and mechanics from the factory, with all necessary machinery and tools, which will assure customers that their carriages will have proper attention, and will preclude the necessity of putting the same in the hands of inexperienced workmen.

Percy Owen will be eastern manager, and the eastern business will be handled through the New York office. Temporary offices have been established at 1904 Broadway, between Sixty-third and Sixty-fourth Streets, where repair parts and mechanics for repair work will be kept.

THE MACHINE SHOP.

ACROSS MICHIGAN A-MOTOR

EXPERIENCE OF AN AUTOMOBILE NOVICE IN A STATE WHERE MOTOR VEHICLES ARE YET NOVELTIES—COUNTRY FOLK DISPLAY A VAST AMOUNT OF CURIOSITY

A contributor furnishes the following account of his first experiences in an automobile:

One evening not long ago I received a telegram from a friend, asking me to accompany him on an automobile trip across country. I was to meet him the following day at Plymoutn. As I had never had the opportunity of riding in an automobile before, I accepted the invitation with alacrity, and the next afternoon my friend met me at the railway station at Plymouth with his steam horse and carriage.

It was 3 o'clock p. m. when we left town, enjoying the exhilarating sensation of being transported in a carriage with no horse attached. I have never taken on enough of the spiritual to be able to fly, but I imagine that "autoing" is a similar sensation. Simply to pull a lever a little way and have the seat upon which you are perched move along gracefully and swiftly is a feeling you cannot appreciate till you have experienced it.

Race with a Trolley Car

We had a "brush" with an electric car en route to Northville, and held our own until we struck a sandy piece of road, when we had to slow up, for in sand an auto runs much like a bicycle.

Upon our arrival in Northville we were immediately surrounded by a crowd of men and boys so large and so persistently curious that we feared we would never be able to break through them without running over someone.

The road toward Novi proved to be winding and somewhat hilly. About a mile out, as we were going up a bad, sandy hill, our driving chain broke. We thought we were in for it then; but, looking through our tool bag, we found some extra links, and the chain being of the interchangeable pattern, we soon had it repaired and were on our way again.

Saw an Auto; Ready to Die

When within about two miles of Novi we stopped at a small hamlet to get a drink of water. A sweet-faced old lady came out and exclaimed, "Well, if here hain't one of them there horseless carriages!" She looked the vehicle all over with devouring eyes and upon our departure declared she could now die happy, as she had seen with her own eyes and touched with her own hands a "real" automobile. The first thing she would do when she met her departed husband on the other shore would be to "tell him about that there horseless carriage that stopped at my very door."

Horse and Women Scared

A little further on we saw a horse and buggy approaching with two passengers, who proved to be women, when all of a sudden the buggy turned up into the corner of the fence, and one of the women jumped out and took the animal by the head. My friend shut off the power and I went ahead to help. I found the women had driven up a bank that was fully two and a half feet high, and how they got up there without breaking a wheel is remarkable.

I took the animal by the head and started to lead it by, when the driver exclaimed, "Oh, I want to go back." I told her I could get them by all right, but she said, "You do not know Major; he is so nervous and so am I. I know I would faint, even if he did not run away, and I want to turn around." Fearing that we would have a sad case of nervous prostration on our hands, I helped them down the bank and started them on the retreat, we following at a respectful distance.

Surprised the Hostler

We rode up to the hotel at Novi just at dusk, telling the proprietor that we would like to put up for the night. He called to his hostler to take care of the horse. Great was the latter's amazement to see our horse breathing steam instead of air. Collecting himself he informed us that we would have to drive our own horse to the barn, as he was afraid of fractious animals.

The hotel proved to be a small affair

with office and bar combined and full of village loungers, among them being a man from a neighboring town who aspired to the shrievalty of the county, also a candidate for prosecutor, who were setting up the drinks and cigars, just to make themselves solid.

The Gaping Rustics

The next morning was an ideal one for "driving." We reached New Hudson in good order, but rode through the town without drawing rein, giving the people no chance to corral us and ply us with questions, although the whole town was out.

When about a quarter of a mile from the village we encountered a very bad sandy hill. My companion was at the throttle, guiding the machine so the two wheels on his side were following a path next to the bank, which was fully six feet high. The engine meanwhile labored under the heavy strain, and my friend was saying, "Get up, Charley; steady, Charley; careful, Charley" (we always talked to the machine as Charley), when all of a sudden off the bank went the two wheels.

A Leap for Life

At the same instant I made a flying leap for life and left my companion to his fate. He instantly closed the throttle and was saved from completely overturning by the gearing underneath the machine, which caught on the bank and held the machine, careened at an angle of 45 degrees.

We looked around to see if anyone was looking, like the man who, stepping out on a slippery morning, suddenly finds himself flat on his back. Sure enough, there the village folks stood, in the middle of the street, apparently well pleased at our mishap. As the machine weighs 900 pounds, we thought we would require their assistance, but, cramping the front wheels as much as possible and opening the throttle wide, we each took hold of a wheel, and with a "now, together," soon had it on the road again, and, waving our hands triumphantly at our spectators, flew away.

Another Mishap

We were going up a sandy hill near Island Lake (there seemed to be nothing but sand hills around there) when, snap! crack! and our chain was again broken, this time in a dozen places. We looked at each other in silence. Finally I spoke up with "Now, what?" My friend gave no reply, but got out of the vehicle and picked up what pieces he could find and then said "Let's push it to that house yonder, and learn how far it is to town."

We acted upon his suggestion and learned that it was two miles. Looking at our watches, we found we would have time to go to town and telephone Detroit for some extra links, in time to get them on the afternoon train. This we did, and we rode up to the Western hotel in Brighton just in time for supper. We stayed all night.

Asked to Exhibit

When about ready to resume our journey the next morning, one of the managers of the county fair that was to be held there that week asked us if we would not stay over there a day and exhibit our machine. He thought it would make as good an attraction as anything and offered to pay us liberally, but we concluded that we were having fun enough out of the trip as it was, and started for Howell. As had been the case in the previous towns, an auto had never been seen there, and we were the center of interest.

The Questions Asked

I give you a few of the standard set of questions that were fired at us everywhere we went: "How far have you come?" "Where are you bound for?" "How fast do you run?" "Does it go up hills all right?" "Can you go through deep sand?" "Does mud bother you?" "How much do they cost to run?" "What is the price of one?" "How much does it weigh?" "How do you make steam?" "Isn't there danger of your blowing up?" "How long does it take to get up steam?" "Where are they made?" "Are the tires solid rubber?" "What do you blow them up with?" "How often do you have to blow them up?" "Do they puncture very often?" "Is it hard to steer?" "Won't you give me a ride?" "Did you ever have to get drawn into town?" "Can anyone run them?" "Does it scare horses?" "Did

it ever run away with you?" and others too numerous to mention.

A Sight for School Children

On our trip we passed two schoolhouses where the schoolma'ams let all their pupils out to view us—this, too, when school should have been in session. The schoolma'ams and most of the country maidens we saw were not desperate flirts, but once in a while we struck an exception. At one place, I remember, an old man and a young lady, evidently father and daughter, in a wagon, turned off at a corner. I doffed my hat to them, and the old man smiled, but the girl gave us the cold shoulder. After we had passed the corner I again waved my hand; this time the old man's back was turned, and the maiden responded with her handkerchief:

"Heaven gave to woman the peculiar grace
To spin, to weep, and cully human race."

As we entered Fowlerville a man stood in the middle of the street and stopped us and asked if we would not turn slightly toward the side of the street. We thought him crazy or the victim of a morbid curiosity, but when we complied with his request, he said: "Stand right here a moment," and made a rush for a stairway, and looking up into the second story we discovered a photographer's camera pointed at us. We looked our prettiest and were soon "took."

To Satisfy Vanity

Attached to our dashboard was a looking glass about 2½x5 inches, by which we could see the stage of water in the boiler without changing our position in the seat. We were always asked what this was for, and we usually replied that it was so we could see if our faces were clean and our hair parted upon our approach to town, which reply, of course, always created merriment among the bystanders.

Each time, after filling our supply tank with gasolene, we pumped air into it, to about 50 pounds pressure, for the purpose of forcing the gasolene more rapidly through the burner, using a common bicycle foot pump. A number of times, while doing this, we were asked if we were pumping up the tires.

We passed through Webberville and reached Williamston just in time for supper. In passing through the country, every now and again, we would catch a glimpse of humanity speeding toward a house, and by the time we reached there the grandparents, man and wife, children and hired man would all be out to the road. If we stopped they were delighted; if we passed right by they would cry: "Let her go."

The next forenoon we passed through Meridian and Okemos without special incident and reached Lansing just after noon. We had some business to transact here and stayed the afternoon and night.

A Wife's Mistake

From Lansing to Eagle we found the best road over which we had traveled. As we reached the foot of a long, steep hill about two miles from Portland, a man came running out to the road as if in a fit of hysterics. We inquired the cause of his hilarity, and he said his wife was out getting some water and, seeing a buggy coming down the hill at a rapid rate with no horse attached, her first intuition was a runaway. She screamed and shouted to her husband that there was a runaway on the hill—the horse had got away and the buggy was coming down alone with two people in it and we would be dashed to pieces at the bottom. Such are the pleasures of "autoing."

Horses Scared or Ought to be

Passing Portland, Lyons and Muir, we arrived home in Ionia just in time for supper. We had come over 120 miles of country roads, good, bad and worse, finding no hill too steep or sand too deep for our steam horse. The main thing that would prevent one making a time record through the country is the number of people you meet driving, and our experience is that eight out of every ten rigs are driven by women, and if the horse is not frightened the driver thinks it ought to be, and motions for you to stop.

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A PAGE OF MUFFLERS

On numerous occasions, the writer has been asked by persons engaged in manufacturing or experimenting on automobiles employing gasolene motors, to tell of some form of muffler that would suppress all noise, and, at the same time, give no back pressure. But up to the present time he has failed to see or hear of such a muffler, although there is one method of which he knows, whereby the exhaust of a gasolene motor can be effectively muffled without producing any perceptible back pressure.

The manner in which this method was discovered is amusing, and was related to the writer by the mechanic who accidentally discovered it. It appears that this mechanic was working in a shop where an experimenter was tinkering with a gasolene motor. The experimenter's bench was just behind the one used by the mechanic who relates the story. The exhaust from the experimenter's gasolene motor was intensely annoying, as it was not muffled at all.

There was a two-foot piece of steam hose attached to the exhaust pipe of the motor. The mechanic was at work on some refrigerating coils, which were each composed of about 100 feet of 2-inch boiler tubing, in the form of a helical coil, open at both ends, of course. One time, when the experimenter was away from his bench and his motor not running, the mechanic, in a spirit of mischief, carefully connected the free end of the steam hose to the upper end of the refrigerating coil. When the experimenter came back and started his motor, he was alarmed at hearing no noise from the exhaust. He could hardly believe that the motor was really running. In fact, the only noise was an almost inaudible puff, puff, from the bottom of the refrigerating coil.

The explanation is simple enough.

What causes the noise of the exhaust is the sudden expansion of the burned gases as they are admitted to the atmosphere. At atmospheric temperature, they would be under little or no pressure, above atmospheric, when the exhaust port is opened, for the piston is in almost the same position as when the admission valve was closed. This is readily understood when it is considered that the explosive is drawn into the cylinder by suction and is not forced in under pressure.

When the exhaust of the experimenter's motor was diverted from the hose into the refrigerating coil, the burned gases had 100 feet of 2-inch pipe to traverse before they reached the air. During their passage through this distance they became cooled to such an extent that there was little expansion when they did reach the air. And there was little or no back pressure, because the 100-foot tube was larger than the exhaust pipe and the passage through it was uninterrupted by any sharp turns.

While experimenting with a gasolene motor, some time after hearing this story, the writer connected the exhaust of his motor to a similar refrigerating coil with similar results, and later verified this result by attaching the exhaust to 100 feet of 2-inch, straight pipe and found, by brake tests, that the back pressure was too small to be noticeable. But as a muffler of this bulk is out of the question for motor vehicle use, the further discussion of the subject in this direction is futile.*

But to proceed with the purpose for which this article was penned, viz., the

* It might prove feasible to make a muffler embodying the principle described by the contributor by using copper tubing instead of iron and of providing this copper tubing with radiating flanges, the same as are provided on the water-cooling tubes of some gasolene vehicles. The copper tubing would radiate the heat much more rapidly than the iron pipe and the flanges would materially aid in cooling the gases. In this manner a muffler made of coils of flanged copper tubing might be made, of a size sufficiently small to be available for motor vehicle service.—Ed.

description of the more familiar styles of mufflers, the writer will tell, with reference to the page of illustrations, how several of them, in use in this and foreign countries, are constructed. In Figs. 1 to 16 inclusive, the mufflers are shown in longitudinal section, while in Figs. 16 to 21, inclusive, they are shown in transverse section.

Fig. 1 shows a muffler having a central pipe with holes around the end farthest from the exhaust inlet. The muffler proper is composed of two annular chambers, as shown, having holes at opposite ends, so as to form, in connection with the pipe a zigzag passage for the burned gases.

Fig. 2 has a similar central pipe with holes opening into the muffler chamber and a baffle plate with holes, in the center of this chamber. The central pipe has a partition in its center which forces the gases to enter the first half of the chamber, and then, after passing the baffle plate, the second part of the chamber to again enter the central pipe, whence it escapes at the end opposite to that at which it entered.

Fig. 3 shows another form of muffler in which the admission pipe extends almost to the far end of the muffler chamber. Fastened to this far end of the muffler chamber is a ring or circle of small pipes. The exhaust traverses the muffler chamber, and passes through these small pipes to the atmosphere.

Fig. 4 shows a form of muffler used by a well known motor vehicle maker of Europe. It is a combination of the types shown in Figs. 2 and 3.

Fig. 5 shows a muffler quite similar to that shown in Fig. 2. It is provided with two baffle plates, however, between which are interposed a number of wire screens.

Fig. 6 is a type of muffler used by a large manufacturer of gasolene vehicles in the United States. Its construction is simple, consisting of a muffler chamber, in which there are a number of screens.

Fig. 7 shows a type in which a number of baffle plates are set in such a manner as to force the exhaust to take a tortuous course.

Fig. 8 shows a muffler having a spiral passageway around the central pipe. As in Figs. 2, 4 and 5 this central pipe is plugged at its center, and the gases enter and depart by it, without travelling directly through it.

Fig. 9 partakes of the characteristics of Figs. 1 and 3.

Fig. 10 is of a rather complex construction, but is giving fair satisfaction on an American vehicle at the present time.

Fig. 11 is somewhat similar to Fig. 5. Alternate baffle plates and screens are used and the exhaust reaches the atmosphere near the point where it reached the muffler.

Fig. 12 employs the same principle as Fig. 2, but employs two baffle plates and a solid central disc.

Fig. 13 is of a novel construction and no one but a Frenchman would attempt anything of the kind. The exhaust enters the muffler through the short part of the plugged central pipe, then passes to the first chamber, then through the circle or ring of small pipes to the chamber at the opposite end of the muffler, through the disc that supports these small pipes at this end and into the central chamber and then to the atmosphere through the long end of the central pipe.

Fig. 14 shows the type of muffler employed by the writer, which has been described in the columns of The Motor Age, in connection with the articles on "The Construction of a Gasolene Motor."

Fig. 15 shows a muffler for an opposed-cylinder motor and is of similar construction to that shown in Fig. 1. The admission is at both ends of the motor and the outlet at the center of the outer casing, as shown.

Fig. 16 shows another muffler for an opposed-cylinder motor, having two admissions, as in Fig. 15 and annular baffle plates with discs of smaller diameter, forcing the exhaust to take a zigzag course.

Fig. 17 shows a cross section of a muffler of original design, constructed in Chicago. It has a double-headed, reversed spiral diaphragm which gives two passages for the exhaust from the admission opening, around the spirals to the exhaust, as shown.

Fig. 18 shows another muffler with a simple spiral diaphragm, around which

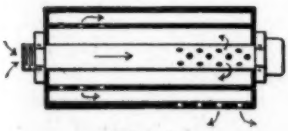


FIG. 1

FIG. 9

FIG. 17

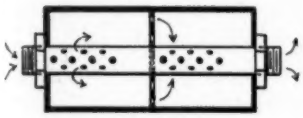


FIG. 2

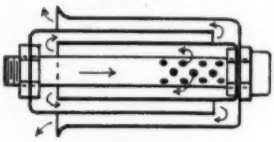


FIG. 10

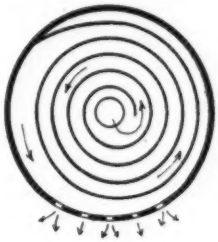


FIG. 18

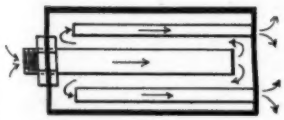


FIG. 3

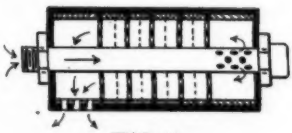


FIG. 11

FIG. 4

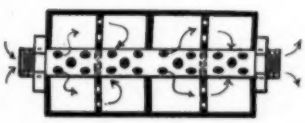


FIG. 12

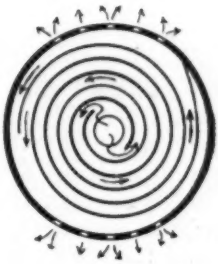


FIG. 19

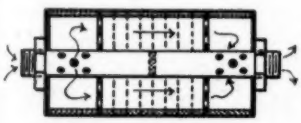


FIG. 5

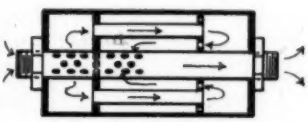


FIG. 13

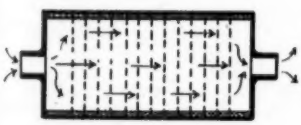


FIG. 6

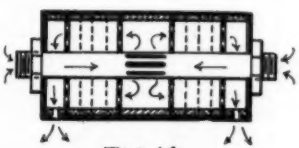


FIG. 14

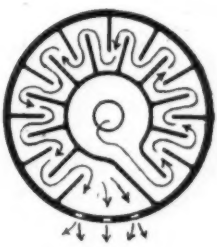


FIG. 20

FIG. 7

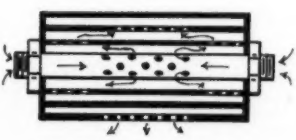


FIG. 15

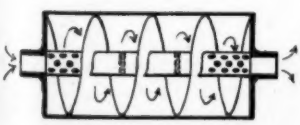


FIG. 8

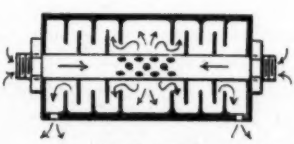


FIG. 16

FIG. 21

MOTOR AGE

the exhaust passes from the center to the outside.

Fig. 19 has a double spiral diaphragm, thus providing two passages for the exhaust, and has two sets of holes for the outlet in the outer shell of the muffler.

Fig. 20 shows a form of muffler devised by the writer, but it has been abandoned on account of the difficulty of getting castings light and sound enough.

Fig. 21 shows a muffler built on a principle similar to that employed in the one shown in Fig. 20. It was designed with the idea of keeping the passages as near to the surface of the muffler as possible and yet to provide devious passages. It met the same fate, however, as that shown in Fig. 20.

THE NEW RAVEL MOTOR

Paris, Nov. 20.—The new Ravel motor, for which the world is indebted to Joseph Ravel of Paris, has attracted a good deal of attention from the visitors to the Paris and Vincennes exhibition by its manner of operating and its starting, which is made by a single lever which never fails in action.

The description of the new principle of this motor which follows suffices to indicate why no failure of ignition can exist with the starting device. It is absolutely impossible to miss firing, however slowly the lever may be operated. This motor is called the "Intensif Motor." Its principle has for its object to obtain the greatest possible power under a given volume out of a hydrocarbon engine. The principle will be best understood in taking up the original description of the patent. The motor has two cylinders, placed vertically side by side. The two pistons acting on the same crank work together—that is to say, rise and fall in the same plane. The crank of the motor axle is inclosed in an air-tight drum. This drum is fitted with a cap containing an admission valve and an exhaust valve. As this drum is in communication with the cylinders that are fitted on it, it follows that the front of the pistons form, together with the drum, a double-bodied suction and compression pump. It is known that in the ordinary four cycle type of motor that only one side of the piston is utilized—the one on which acts the pressure due to the explosion of the gaseous mixture. The other side has no action on the power of the motor. As can be seen, the inventor has utilized this side of the piston to furnish the air for the explosive charge and the front side of the piston is utilized. In other respects the Intensif motor works like all ordinary four cycle type motors—its cycle is accomplished in two revolutions of the motor axle. In considering the working of the two sides of the pistons the cycle of the Intensif motor can be defined thus: It is a four cycle motor on the back part of the pistons and a two cycle motor on the front part, so that this motor presents two distinct functions. Firstly, the front side constitutes a pump and prepares the charge, and, secondly, the back of the pistons receive the explosive charge all prepared, and consequently receive the impulse of the explosion.

To begin with, let us consider only the result of the working of the pumps formed by the front sides of the pistons. The two pistons working together, as the rods are driven by the same crank, it follows that in their backward throw each of the pistons draws in the equivalent of a cylinder full of air and expels it afterward in the onward throw, so at each turn of the motor axle the pump draws in a volume of air which is precisely the double that of the one that would be drawn in by one single piston. It is that double volume which is sent alternately into each of the cylinders above the piston, viz., into the explosive chamber. It must be understood that the air passes before being admitted through a carbureter. Now, to thoroughly under-

stand the distribution of the gaseous mixture it will be useful to give a table of the working of the four-cycle two-cylinder motor:

	1st Cylinder	2nd Cylinder
First Revolution	Admission	Explosion
	Compression	Exhaust
Second Revolution	Explosion	Admission
	Exhaust	Compression

It can be seen that there is one admission each revolution. Now, each of these admissions of air must comprise the volume of air drawn in by the front side of the two pistons.

Supposing that each cylinder capacity produced by one of the pistons is of one liter; for the two revolutions forming the cycle there are two admissions, standing at two liters for the complete cycle of an ordinary motor. The air drawn in by the pumps formed by the lower side of the pistons is of two liters volume each revolution, so each admission comprises those two liters—that is to say, four liters for the two revolutions.

This motor is thus theoretically of double the capacity of ordinary motors, and as the power of a motor is in direct proportion to its capacity it stands to reason that this motor has a double power for its size. An observation is to be made about that double volume which is admitted in a single cylinder. To the volume represented by the piston race the capacity of the admission and escape chamber and what is denominated explosion chamber must be added; when the admission is finished—that is to say, when the admission valve is shut—the total capacity over the piston is sufficiently large to contain the two cylinders full of air that have been discharged from the drum. The result is that, after the period of compression, at the moment when the explosion is going to occur, the mixture is compressed to thirty-five pounds per square inch and the initial compression of the explosion is 180 pounds.

To resume, at each revolution of the engine a double charge of explosive mixture is sent into each of the cylinders; the diagrams taken from the indicator cards show that in this motor the working curve of the explosion is sensibly the same as the one taken on a steam engine. It follows that it is economical and that it will give certain advantages as to power and stability.

This double charge has also the effect of considerably reducing the weight and size of motor, as the air sent by the pump, passing through the carbureter under pressure, it follows that the temperature of the carbureter is constant, avoiding the necessity of heating. The starting of the motor is thus assured, whatever may be the temperature of the air. The exhaust gases are absolutely smokeless and odorless owing to the perfect combustion of the mixture. The temperature of the explosion, whose initial compression is only twelve atmospheres instead of eighteen or twenty, is considerably lowered, resulting in a notable saving of heat. This motor can operate with any gas—coal, gasolene, alcohol, etc.

At the exhibition of the Champ de Mars and at the annex of Vincennes Mr. Ravel exhibited horizontal motors, designed so as to obtain maximum rigidity. The distribution of the mixture and the double charge principle remains the same as in the vertical motor described. The difference consists in the explosion taking place between the two pistons. This arrangement is adopted only to avoid vibration.

ORIENT GASOLENE RUNABOUT

The Orient gasolene runabout made its initial bow to the public at the Madison Square Garden show, New York City, where it attracted a deal of attention as being one of the distinctive types of the show, in that it is the only machine of its construction that has been put on the market. It is fitted with a French gasolene water-cooled motor, varying in size from three to five horsepower, according to the purposes for which the runabout is intended. It is very light, weighing less than 500 pounds, all on, and yet contains all the requisites of an up-to-date vehicle.

It is fitted with a water-cooled motor, the water being circulated by the aid of a pump. It has two speeds forward and one back, aside from the variations that can be obtained by regulating the speed of the engine. Fitted with a three-horsepower motor, the price is $750. When fitted with this motor the vehicle is designed for city use, over boulevards and reasonably good roads.

When the vehicle is designed to be used on country roads it is fitted with a three and one-half horsepower motor and sells at $850. With this motor it is capable of attaining almost any desirable speed on smooth roads.

For racing, or where high speed under all sorts of conditions is desired the runabout is fitted with a five-horsepower motor and sells at $1,000.

The arrangement whereby the machine

is steered and controlled is very ingenious. The hollow rod, seen at the left hand side of the vehicle, carries both the steering mechanism and the levers for controlling the motors. The motor-controlling mechanism is accessible to the driver's left hand, while the steering lever, which extends to both sides of the rod, can be operated with either hand. The driver, of course, sits on the left hand side of the vehicle.

The steering is accomplished by means of a pinion at the bottom of the rod carrying the steering levers, which pinion meshes with a rack. This construction assists to prevent vibration of the steering handle when traveling over rough roads.

A powerful friction brake is operated by means of a foot lever. By means of this brake the vehicle can be brought to a standstill in a very short distance when traveling at its fastest.

The body of the vehicle is of the piano box, runabout type. It is upholstered in cloth or leather, as desired, and is finished in colors to suit the purchaser.

The motor is semi-spring hung, which relieves it of sudden, heavy jars in case the vehicle runs over obstructions, and also allows the springs to absorb the vibrations of the motor itself so that it is scarcely noticeable when the vehicle is in motion.

Business Manager Gash, of the Waltham Mfg. Co., makers of the vehicle, is shown operating the runabout in the accompanying illustration.

FINANCING AND LOCATING NEW COMPANIES

It is quite the thing with makers of automobile company promoters to canvass the larger towns and moderate sized cities for the purpose of obtaining bonuses and stock subscriptions in return for locating the proposed plant in one of these towns or cities. The matter is invariably taken up by the local newspapers and board of trade or some committee of citizens. The following from the Grand Rapids (Mich.) Herald, while bearing the stamp of more sincerity than most of such announcements, is still typical:

If the Michigan Automobile Co. is given proper support by the business men and board of trade of Grand Rapids this city will be favored by the installation of the first factory of its kind in Michigan and a stock company of at least $50,000 capital will be organized for the manufacture of what is said by experts who have tested it to be the most successful automobile yet placed on the market.

The promoters of the new industry and at present its owners are W. S. Daniels of this city and B. J. Carter of Jackson, Mich., the latter the inventor of the new machine.

In his business as bicycle agent Mr. Daniels, while investigating the practicability of the different makes of automobiles, with an idea of retailing them, met Mr. Carter of Jackson and gave his machine an examination and exhaustive test. Learning that it had not been placed on the market, Mr. Daniels acquired an interest in the machine, and the Michigan Automobile Co. was formed.

The Clipper bicycle plant, which is now for rent, has been mentioned as a very desirable building which could easily, with small cost, be converted to meet the requirements of successful automobile manufacture.

The Carter machine is already a success, two years of experimental work having been passed, and there is the usual outlay of money to come for that purpose. Business men in Jackson are ready to form a company for the manufacture of the machine, but the promoters of the scheme prefer to locate in a large city, where there will be a heavy local trade.

The city of Elkhart, Ind., has offered a factory of 300 foot frontage and a stock company with a paid-up stock to the amount of $25,000, and the Studebaker

Wagon Co. of South Bend, Ind., are also negotiating for the right to manufacture the Carter machine.

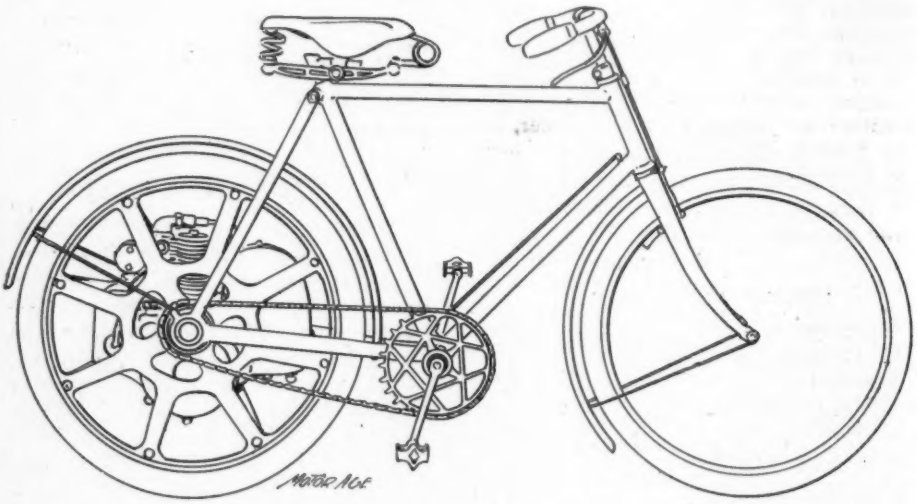
The matter will be brought before the local board of trade at once and an effort made to establish a company in this city.

The Carter machine is steam-propelled and many of the objectionable features of the steam carriages now on the market are done away with in the new machine. The carriage will sell from $750 to $1,000, and at this price a good, serviceable vehicle can be put on the market almost immediately, with the purchase of a minimum amount of special machinery.

"People who are able to buy automobiles," said Mr. Daniels yesterday, "are able to pay for them at once, and for this reason an order for a carriage of the horseless variety is invariably accompanied by one-third of the cash price, the remainder payable on the delivery of the machine. This insures an immediate return from an investment."

SINGER MOTOCYCLES

The Singer Cycle Co., Ltd., of Coventry, England, one of the oldest cycle manufacturing firms in the world, have taken up the manufacture of motocycles under the Perks & Birch patent, which covers a construction in which the motor and entire motor mechanism is inclosed in one wheel. In a bicycle, for either lady or gentleman, the frame of the machine is substantially the same as in a foot-propelled machine, as shown in the accompanying illustration. In addition to bicycles the Singer company is making tricycles in which the front, or steering, wheel is equipped with the motor mechanism, on the order of the much-talked-about Lawson gyrascope, except that the entire mechanism is contained within the wheel proper. The appearance of the front wheel is exactly the same as that of the rear wheel shown in the illustration.



SINGER MOTOR BICYCLE

The device was described at length in The Motor Age of June 14 last, when the American patent was issued, and in the issue of August 2 a further description of a trial of the machine was given under the name of the "Compact" cycle, as it was then called. The device bears the

stamp of merit. For single bicycles or tandems a more desirable disposition of the motor mechanism can scarcely be imagined. For tricycles it does not appear to be quite so advantageous, although it is infinitely superior to the Lawson device. It is strange that some American firm has not already taken up the purchase of the patent, for it is known that the American rights are for sale.

NEWS OF THE MOTOR INDUSTRY

ASSOCIATION ELECTS OFFICERS

New York, Dec. 3.—The organization committee of the National Association of Automobile Manufacturers met in the offices of the Locomobile Co. of America last Saturday and completed the organization by the election of the following officers, giving due care to the distribution of officers and directors among the various firms composing the association:

President—S. T. Davis.
First vice-president—J. Wesley Allison.
Second vice-president—C. J. Field.
Secretary—E. P. Wells.
Treasurer—D. S. Walker.
Directors for one year—A. S. Winslow, F. T. Bradbury, S. T. Davis and C. H. Duryea (another to be named later).
Directors for two years—A. L. Riker, J. H. Flagler, J. M. Hill, W. C. Baker and R. Ballantyne.
Directors for three years—J. W. Allison, J. B. Walker, C. J. Field, E. P. Wells and Alexander Winton.

CHICAGO SHOW BOOMING

Thirty-two of the sixty available spaces at the Chicago automobile show to be held in March have already been applied for, although the blanks were not mailed before November 23 and notice was given that no space would be alloted before December 15. The applicants who have already expressed a desire to show will exhibit steam, gasolene and electric vehicles, lamps, running gears, tires, gasolene motors, boilers and rough and finished castings. On December 15 space will be alloted to applicants then on file, giving each, as nearly as possible, the spaces chosen in the applications. Priority of application and size of space will govern in case two or more concerns desire the same space.

Application has been made to the traffic associations for reduced rates from all parts of the country, assurances having been received that there will be a large attendance of dealers, many of whom will be men now engaged, in a large way, in the cycle trade. Provision has been made for the admission of these visitors to morning sessions without charge and to place them in touch with the exhibitors.

The Motor Age, under whose management the show will be held, will be pleased to forward blanks and other details to anyone who may require them.

The festive press agent is already giving the show publicity through the medium of the daily papers in Chicago and other western cities.

PHILADELPHIA SHOW APPLICANTS

Philadelphia, Dec. 3.—The Automobile Club of Philadelphia and the Pennsylvania Automobile Club have combined in the effort to make next February's automobile show in this city a success, the probability of that much-to-be-desired result of the Quaker City's first venture in that line seems assured. A joint meeting of the two organizations has been called for Friday night of this week to outline the program for the entire week of the exhibition. The affair will be necessarily on a much smaller scale—a replica of last month's Madison Square Garden show. There will be performances on the track every afternoon and evening, obstacle races, braking contests, quick-starting and stopping trials, not alone by men, but by women as well, for it must not be forgotten that many Quaker maids are surprisingly adept in handling the auto lever. There is also some talk of erecting an artificial incline to test the hill-climb-

ing virtues of the various makes of machine.

With the diagrams of the lay-out of the huge Second Regiment Armory building, which were issued only last week, the responses from the trade have been gratifyingly numerous. There have already been filed applications for space from the following concerns:

Pennsylvania Vehicle Co.
De Dion-Bouton Motorette Co.
Century steam and electric vehicles.
Marlborough Automobile and Carriage Co.
Maurice Loeb.
John Wanamaker (representing the Orient and Foster vehicles).
Mobile Co. of America.
Locomobile Co. of America.
Winton Motor Carriage Co.
Reading Steam Carriage Co.
Wharton & Wright.
Searchmont Motor Co.
Philadelphia Motor Vehicle Co.
Oakman Vehicle Co.
Hinchman & Hawkins.
Neonont Lamps.
Liberty Bell Co.
Gray & Davis.

Besides these there are a number of applications from manufacturers of vehicles, motors and parts which have not yet been received, but which the promoters are confident of receiving during the coming week.

At the show headquarters, Nos. 138-140 North Broad street, the committee in charge is daily perfecting the many preliminary details, the offices presenting a scene of activity which augurs well for a successful outcome of the exhibition.

AUTO SHOW ON WHEELS

The project of the Cycling West and Motor Field to secure a train load of motor vehicles and representatives of the manufacturers to travel through the western part of the country, stopping at the different cities en route, for the purpose of giving exhibitions, placing agencies and generally arousing interest in the automobile business, has taken definite form. It will start from Chicago soon after the close of The Motor Age exhibition, which closes on March 30, thus permitting the manufacturers who will be at the Chicago show to transfer such portions of their exhibits as may be desirable directly to the special train of the Denver publication. President Wahlgren of the publishing company is authority for the statement that he has already received a sufficient number of applications for accommodations on the train to insure the success of the project.

STEARNS' NEW FACTORY

Cleveland, Dec. 2.—F. B. Stearns & Co., manufacturers of gasolene vehicles, have commenced operations in their new plant, which is located in East Cleveland, just outside the city limits. While the establishment is comparatively small, the building being about 35x80 feet and two stories high, no expense has been spared in equipping it with modern machinery, and the firm is well prepared to turn out a first-class machine. For the present the output will be about two vehicles a week, all the work except the body-making being done in their own factory. They have already built and sold about twenty vehicles, all of which are in successful operation.

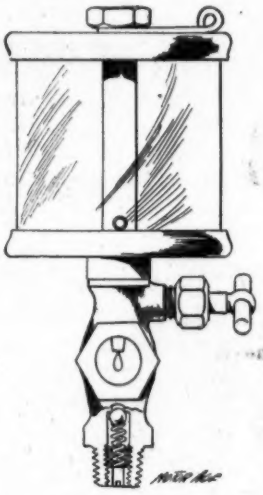
AN AUTOMATIC GAS ENGINE OILER

The proper lubrication of the cylinder and piston of a gas or oil engine in which the average temperature during inflammation is not far from 2,000 degrees Fahrenheit is one of the essential conditions of successful operation, says the Electrical Review. In order to obtain the best results a constant feed commensurate with the piston speed is absolutely necessary, as too much oil will cause smoke and too little a cutting of the cylinder or piston. Then, with a variable speed, as in automobile engines, the amount of oil should be in proportion to the revolutions and should stop when the engine stops, and to attain such results the feed must depend on some factor of the speed such as the induction strokes of the engine.

The engraving herewith illustrates an oiler which has many excellent features. This oiler was designed especially for lubricating the cylinders of gas or oil engines, vacuum pumps or air compressors in which the pressure during the induction stroke is slightly below atmospheric

pressure, which is always true of such machines, for if the pressure within were not less than without, the cylinders would never fill. The essential features are a glass reservoir which is filled through a hole in the top normally covered by a slide; a needle valve which adjusts the feed into the air-tight bull's-eye, as shown, and a check valve held to its seat by a spring, the compression of which is adjusted by a nut, which can be turned with a screwdriver.

While this is essentially a cylinder oiler, by removing all compression from the spring it may be used in place of the



An Automatic Gas Engine Oiler.

ordinary sight feed oiler on any part of the engine. When this oiler is used for admitting oil to the cylinder of a gas engine or air compressor the check valve spring is so adjusted that the valve seats when the air pressure above and below the check is the same, but if the air pressure below the check valve is rarefied or slightly reduced the check will open and allow the air in the bull's-eye inclosure to pass into the cylinder, whereupon the atmospheric pressure on the oil in the reservoir will force it down through the needle valve to the bull's-eye chamber, from which it will pass into the cylinder every time the check valve opens. When the engine stops rarefaction in the cylinder ceases, the check valve remains seated and the oil stops feeding through the needle valve, because oil can not drop into the bull's-eye chamber if air and oil are not drawn out. When compression begins in the cylinder the check valve shuts and no smoke or pressure from the explosion passes into the bull's-eye chamber or reservoir.

The reservoir can be filled while the engine is stopped or running without opening or closing a valve or changing the adjustment of feed. The quantity of oil is always in sight; the amount feeding can always be seen; the oiler stops with the engine and begins when the engine is started again, and as no pressure accumulates in the glass reservoir there is no danger of the oil cup exploding. This oiler is the invention of C. E. Sargent and is manufactured in several sizes by the Michigan Lubricator Co., 274 Beaubien Street, Detroit, Mich.

STEARNS' CATALOGUE

F. B. Stearns & Co. of Cleveland have issued a neat catalogue in which the merits of their gasolene automobiles are fully set forth. The company follows the very commendable practice of showing photographic reproductions of the various parts which go to make up their vehicles, as well as two views of the assembled running gears, sans bodies. Through a round hole in the dark cover peeps a picture of a vehicle printed on the white paper of the inside of the book.

PNEUMATIC TIRE LITIGATION

A writ on behalf of the Dunlop Pneumatic Tire Co. of London, England, was issued at Toronto on November 29 against Senator George A. Cox, Edward Gurney, E. R. Ryckman, barrister, all of Toronto; Warren Y. Soper of Ottawa, the Dunlop Tire Co., Ltd., of Canada, and the American Dunlop Tire Co., claiming damages to the amount of $250,000 for alleged breach of contract; also for an account, an injunction and the appointment of a receiver to the Canadian Dunlop Tire Co.

The plaintiff company owned or controlled both the Canadian and American

business of the Dunlop companies. After some negotiations it sold out the rights for Canada and the United States to the plaintiffs, Messrs. Cox, Gurney, Ryckman and Soper, with the proviso, however, in the contract that no tires were to be sent out of America. This condition was also to bind any persons or company to whom or to which the defendants might sell out. It is claimed by the plaintiffs that the contract has been violated in that tires have been sent to Australia.

MANY STORAGE STATIONS

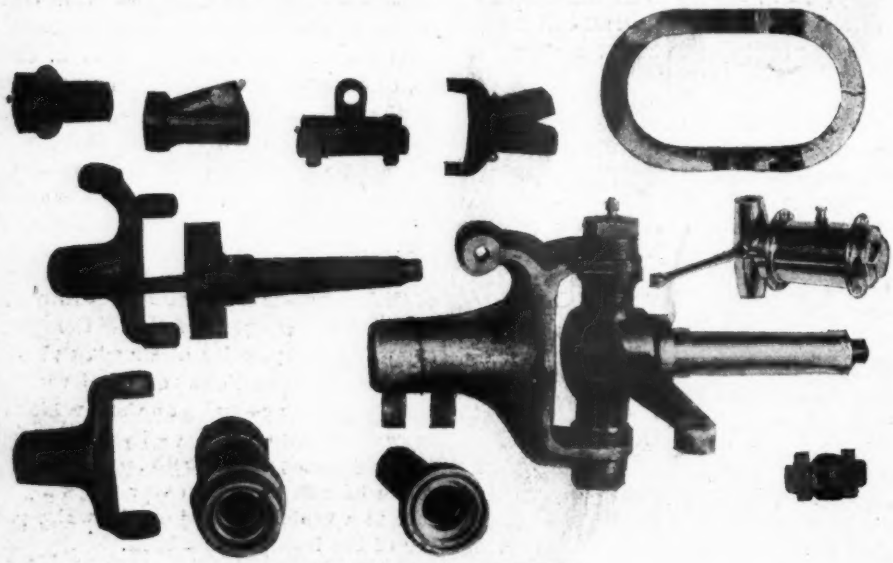
New York, Dec. 1.—Automobilers will surely not lack any more conveniences on every hand for storage, power supply and repair. The independent storage and repair stations have proved handsomely paying investments and more of them are in contemplation on even a larger and more elaborate scale.

In addition to these public stations the principal automobile manufacturers are looking after the convenience of their own customers by the establishment of numerous branches and stations, so that the chauffeur in need or distress has now not more than a block or two to go to reach a supply port or a haven of refuge.

The Winton Motor Carriage Co. is about to make an important move in this direction.

CONRAD FRAME FITTINGS

The accompanying illustrations show the frame fittings and hubs that are being marketed by the Conrad Motor Carriage Co. of Buffalo. In addition to the parts shown, the company is prepared to furnish bodies in the white, or painted and trimmed; light or heavy differential gears; pneumatic tired wire wheels and solid tired wood wheels, as well as running gears complete. The frame fittings will be furnished either in the rough or machined.



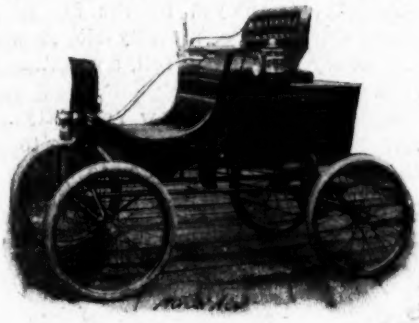
CONRAD FRAME FITTINGS

In addition to furnishing the parts mentioned, the company is putting on the market the runabout and the delivery wagon illustrated on the opposite page.

DOUBLE TUBE TIRES

Akron, O., Dec. 3.—The double tube tires which two prominent Akron manufacturers purpose to push will undoubtedly make themselves felt in the automobile trade as well as in the bicycle business. The five per cent royalty demanded by the owners of the Tillinghast patent on all single tube tires applies to large automobile tires as well as the

smaller bicycle tires, and since by bringing out a double tube tire this amount can be saved—quite an item in large tires—it is but natural that manufacturers should push such a tire to the fore in the automobile field. In fact, the Diamond Rubber Co., one of the concerns referred to, already announces that its new double



Conrad Steam Runabout

tube tire will be furnished at once in all sizes from the largest automobile tire to the smallest bicycle size.

The new Diamond tire is fitted with an inner tube which, by means of a new mechanical joint, is to all intents and purposes endless. The construction of the joint is shown herewith. It is effected by the use of a rubber cylinder sufficiently thick to preserve its shape even under great pressure. On the outside of the cylinder are two grooves running all the way around. The ends of the tube are lapped over this cylinder and are held firmly in place by means of two rubber bands fitting into the grooves on the cylinder. When the joint is properly made the ends of the inner tube cannot be drawn apart and the tube is guaranteed not to leak, since the greater the air pressure the tighter the joint. The Diamond company has applied for a patent on this joint. The inner tube is drawn into the casing through a slit near the valve. the slit being afterward laced with heavy cord. The work of repairing can be accomplished without removing the casing entirely from the rim and the repair has the advantage of always being permanent and satisfactory, no vulcanizing being required except in case of severe cut.

The Goodyear Tire and Rubber Co. is showing a new tire in bicycle sizes and will probably add the new feature to the automobile tire. In this tire the inner tube is separate from the casing, being secured only at the tread. In this way the Tillinghast patent is evaded, since it covers the construction of a tire and inner tube in practically one piece. The Goodyear tire may be repaired by injecting rubber solution, or if the puncture is on the tread a plug may be inserted as in the ordinary single tube tire.

AMERICAN MOTORS PLEASE THE BRITISH

Says the London Graphic: From America, as usual, comes the newest invention, a steam motor—traveling as quietly as the most luxurious of carriages, with no smell, no jar, no noise and no vibration, answering to the touch as obediently as a perfectly trained thoroughbred horse, more untiring and swifter. It was a pure delight to speed along the roads in the keen autumn air, imbued with a sense of security and freedom. The machinery of

Conrad Delivery Wagon

these motors is very delicate and will probably require further improvements to make it thoroughly practical, but even at present for amateurs, for invalids, for dilettantes, these luxuriously cushioned and absolutely comfortable carriages give the greatest amount of pleasure and promise to be the vehicles of the future.

A PUMP CONCERN

Cleveland, Dec. 3.—The Ohio Cycle Pump Co. of this city was incorporated a

few days ago with $500,000 capital stock by F. T. Sholes, John H. Goffin, C. R. Smith, George P. Rust and C. T. Fauer. The company has secured the exclusive right for Ohio for an automatic penny-in-the-slot bicycle and automobile pump, made by a New Jersey concern. It will operate pumps in all the leading cities and towns of the state.

BRIEF NEWS OF THE INDUSTRY

The People's Automobile Co. of Columbus, O., has changed its name to the People's Automobile Mfg. Co.

The Lunkenheimer Co. of Cincinnati, makers of steam engine fittings, are opening a factory for the exclusive manufacture of motor vehicles.

The property of the Omaha Gas Engine and Motor Co. was recently sold by the receiver and bid in by Levi F. Weeks, who has been obliged to begin replevin proceedings to obtain possession of the property.

The Vehicle Rubber Tire Machinery Co. of Indianapolis has been incorporated with a capital stock of $8,000.

The Sprague Electric Co. of New York City is making a specialty of electric motors for use in motor vehicles.

A porter employed by the St. Louis Motor Carriage Co. recently eloped with the money for the pay roll, amounting to $500.

A deputy sheriff in New York City has levied on a motor vehicle belonging to the Oakman Motor Vehicle Co. to satisfy a claim of $800 for J. J. Brandenburg.

The Warwick Cycle Co. of Springfield, Mass., has turned out a motor vehicle fitted with a De Dion gasolene motor. It is announced that the company will engage extensively in the manufacture of automobiles in the near future, making its own motors.

A NOVEL ACCUMULATOR

In L'Electrician (Paris), A. Bainville describes a new and very interesting accumulator, in which the chemical action is manifested by the production of a metallic deposit and of a quantity of free gases.

During the charging of the element a deposit is made at the negative electrode, or cathode, which constitutes the positive pole of the accumulator, while at the positive electrode, or anode, oxygen is set free and passes into a receptacle designed to receive and hold it.

The anode C (see the diagramatic sectional view in Fig. 1 of a single element) is composed of a hollow cylinder of carbon which communicates with a receptacle R through the tube S. The cathode P is composed of antomonic lead P, and surrounds the anode. The vessel V, which contains the electrolyte (sulphate of cadnium) is hermetically sealed, but communicates with the receptacle R, the valve T being interposed.

When the element is charged, cadnium is deposited upon the cathode P, while the oxygen which is disengaged from the anode C, accumulates in the upper part of the vessel V, whence it passes into the receptacle R, through the tube T, and thence finds its way through the tube S, into the interior of the anode C. When the pressure indicated by the manometer M, is one kilogram, the element is fully charged and it is of no avail to wait for a higher pressure.

To discharge the element, the valve T, is closed and the two poles are joined, with the proper resistance interposed. The deposit of cadnium is transformed into a sulphate; the free hydrogen, produced by this reaction, passes through the porous cylinder C, where it meets the free oxygen and the two combine to form water. This phenomenon continues until the deposit is completely dissolved.

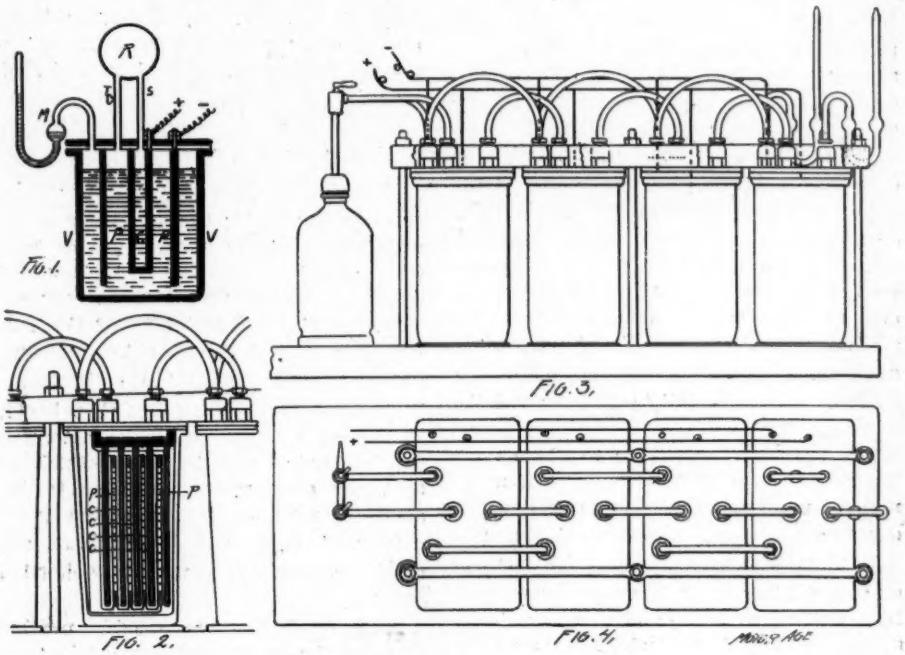
The electromotive force of the element is 1.5. The current loss may reach .30

amperes per square decimeter of surface of the anode.

In the commercial element the single anode is replaced by a series of small tubes of carbon, all of which communicate with the same chamber. The outer vessels also all communicate with the same chamber, so that there is only one gas receptacle for one battery.

The cathode is composed of layers of celluloid, one above the other. At the bottom of these layers is a layer of lead of the same length as the layers of celluloid, the end of which is burned to the negative conductor. The deposit of cadnium is made on the lead plates.

Fig. 2 shows a section of a commercial element, while Figs. 4 and 5 show an elevation and a plan view, respectively, of a battery of four elements.



A NOVEL ACCUMULATOR.

FROM THE FOUR WINDS

DEPARTMENT OBDURATE

Washington, D. C., Dec. 1.—The petition of the Automobile Club of America asking for a reconsideration of the decision of the treasury department, rendered July 30 and published at the time in The Motor Age, on the subject of the carriage of automobiles on steam ferryboats, has been submitted to the solicitor of the treasury for opinion. Solicitor Reeve, after considering the same, as well as the oral argument of the club's counsel, has rendered an opinion substantially sustaining the department's decision.

Following is the full text of the solicitor's opinion:

The question is whether gasolene may lawfully be carried in the tanks of automobiles upon steam passenger ferries under section 4472 of the Revised Statutes.

That section provides that no benzine or coal oil "or other like explosive burning fluids, or like dangerous articles, shall be carried as freight or used as stores on any steamer carrying passengers."

The point is made by the Automobile Club that gasolene or naphtha carried in the tank of an automobile is not "freight" in the sense of this statute, and that, therefore, the law is not violated by carrying those vehicles with tanks containing gasolene or naphtha attached to them.

There may be room for doubt whether, in a strictly technical sense, the words "carried as freight" embrace gasolene in tanks attached to vehicles which are carried as freight or on which the equivalent of "freight" is paid. I am of the opinion, however, that whatever doubt exists upon the subject should be solved in favor of the government, in the interests of public safety. If the ferry company remains dissatisfied with the ruling of the department it may make a test case for the decision of the courts.

I have, therefore, to advise you that in my opinion the ruling of the department of July 30, 1900, as contained in department circular No. 155, forbidding the carriage of "gasolene automobiles" on steam ferryboats, should not be disturbed.

NEW YORKERS' CHAFFING

New York, Dec. 1.—Chauffeurs here are chafing under the strictly construed restrictions of the government as to the transportation on ferries of vehicles using gasolene as fuel or a motive power.

Ex-President Chamberlin of the Automobile Club of America has continued his negotiations with the authorities at Washington on the subject, but has got little satisfaction. He has been told that the law exists and is unmistakable and that the only remedy will be to have congress take legislative action in the matter. To this end the national automobile organization will now bend its efforts.

In Great Britain reasonable modifications of the too comprehensive law have been made and it probably only needs the attention of the national lawmakers to be directed to the hardships and inconsistencies of the present law to have it remedied probably along the lines of the British legislation.

HOSTILE NEWSPAPERS

The automobile business, like every new business, and the pastime of automobiling, like every new pastime, is suffering and is bound to suffer from disparaging and hostile comment on the part of newspapers, which comment has a serious effect on both the business and the pastime. Such comment is sometimes inspired by prejudice or maliciousness and sometimes by mere thoughtlessness. If it be the latter, a courteous note from the officers of some club or some individual or manufacturer will have the effect of preventing repetitions of the useless offense on the part of the newspaper whose editor is addressed. If it does not have

this effect, silence and the withholding of advertising patronage are the only remedies left.

These remarks are inspired by the final sentence of an editorial paragraph in the New York World, which says: "The danger of explosion on passenger steamers cannot be too carefully guarded against, and the gasolene engine has no place on any of them." The "passenger steamers" to which reference is made are ferry boats, which are never five minutes from shore.

AUTOMOBILES 1000-MILE RUN

London, Nov. 24.—The thousand-mile motor trial at the Crystal Palace this week has attracted the attention of English automobilists. It came about through a discussion of the merits of the Decastille car, which was challenged by Moffat Ford, the managing director of the automobile company.

The French company undertook to run two cars, one of five-horsepower and the other of eight, a thousand miles without stopping. The French drivers, muffled in thick furs, took turns every two hours. Hot bricks were tossed into the cars to keep the drivers warm, for it was bitterly cold under the glass roof of the palace.

The eight-horsepower car started off at a twenty-eight mile clip. The smaller one made a twenty-four mile pace. The larger car had to stop after having made 312 miles, as the carbureter froze. The time was thirteen hours thirty-six minutes and nine seconds.

The five-horsepower car completed its one thousandth mile yesterday morning, the time run being forty-eight hours four minutes and four seconds. It did not make a stop throughout the run.

AUTO CLUB COMMITTEES

New York, Dec. 3.—The following committees for 1901 have been appointed in the Automobile Club of America:

Contests and technical—C. J. Field, chairman, with power to appoint four associates.

Laws and ordinances—George F. Chamberlin, chairman; James C. Church. One to be appointed by Mr. Chamberlin.

Runs and tours—Albert C. Bostwick, chairman; Dr. J. Grant Lyman, J. C. McCoy, George Isham Scott, Harrison K. Bird, W. E. Scarritt, J. Dunbar Wright.

House committee—Charles P. Doelger, chairman; Malcolm W. Ford, S. T. Davis, Jr., J. M. Hill, Samuel H. Valentine.

Library committee—A. R. Shattuck, chairman; E. E. Schwarzkopf, Frederick W. Tousey.

Membership committee—Gen. George Moore Smith, chairman; Sydney Dillon Ripley, J. M. Ceballos, V. Everit Macy.

Auditing committee—George W. Young, chairman; J. Talbot Taylor, Warner M. Van Norden.

Albany post road committee—J. M. Hill, chairman; Col. John Jacob Astor, Amzi L. Barber, Alexander Fabbri, Ernest G. Fabbri, S. T. Davis, Jr.

WESTCHESTER CLUB RUN

New York, Dec. 1.—The recently organized Westchester County Automobile Club, which has on its roll many prominent members of the Automobile Club of America, had a run to-day from the Waldorf-Astoria to Howard Willetts' country place, Gedney Farm, near White Plains. The journey out was by way of McComb's Dam bridge and Mamaroneck avenue and the return by way of the old Boston post road.

There were thirteen vehicles in the run. J. Dunbar Wright was the first to reach the farm, with Albert C. Bostwick second, Howard Willetts third, P. G. Thebaud fourth and F. W. Geissenheiner fifth. Among the other chauffeurs and guests were: Nathaniel G. Reynal, Jules Reynal, Charles Elliott Warren, General George Moore Smith, Oliver Harriman, Alexander Smith Cochrane, Bradford B. McGregor, George von Leith, Mr. Greis, Mr. Whitehouse, Mr. Macy and Mr. Chubb.

The Automobile Club of America will probably secure new clubrooms on Fifth avenue, now under consideration.

OVER THE ALPS IN AN AUTO

A German army officer, Lieutenant Engler of Frankfort-on-Main, together

with his wife and an engineer, has crossed the Alps in a Benz motor carriage. The carriage had a weight of 1,400 pounds and, besides the above mentioned three persons, had to carry about 160 pounds of baggage. The journey was started at Frankfort, went over Stuttgart, Ulm, Munich, Kochelsea, Walchensea, whence the vehicle crossed the Karwendel mountain (33,800 feet) and proceeded to Insbruck, in Tyrol. It then went over the Brenner pass (4,100 feet) to Venice, in Italy. The return trip was made via Trient, the Tonal pass (5,600 feet), Apaica pass (3,600 feet), Triano, Bormio, Stilfer Joch (8,960 feet). This was the first time an automobile crossed the Stilfer Joch, where the ascent in some places is very hard, and the roads are not the best. The trip extended over a distance of about 1,280 miles, which was covered in ninety-nine hours, making an average speed of about thirteen miles per hour. The Tonal pass is very steep, but the motor vehicle surmounted all difficulties very satisfactorily.

COMPARATIVE COST OF AUTOS AND HORSES

Mr. Beaumont gives some interesting calculations of the relative cost of motors and horses, which must convince business people that the matter is worthy of consideration, says the London Spectator. First, he compares the efficiency of a light voiturette carrying two people with that of the one or two horses that doctors and other professional men or tradesmen keep. If the requirement is merely for a small distance, such as fifteen miles a day for four days a week, the cost of a two-seat motor, such as may be bought for 200 pounds, works out at almost the same as that of a single horse and trap—roughly, 80 pounds a year, or 6d a mile. Withal the motor has the advantage over a horse of being available for an occasional run of a hundred miles. But if the annual mileage be doubled the cost of the carriage is more than doubled, whereas that of the motor is only increased by the additional wear and tear and the cost of the petrol used—the motor then works out at 4d a mile, as against 7½d for the horses. If we suppose that the accommodation needed is that of a four-seat carriage running 6,000 miles in the year, the motor will cost 51¾d, as against 1s a mile, and so on. For heavy traffic Mr. Beaumont shows how the cost of transport may be reduced to 6d per mile per ton, where horses would cost 10¼d and railway carriage from 11¾d to 1s 8d. It is needless to quote further from these statistics, which show a general balance of cheapness, convenience and elasticity of use in favor of the motor, increasing with the amount of work done. It is clear that the motor has "come to stay," though it may as yet be only in its infancy.

NEGRO AND AUTOMOBILE

A large automobile which slowly passed down Howard to Baltimore Street the other afternoon, attracted considerable attention, says the Baltimore Sun. A negro standing near the Academy of Music seemed particularly awed by the movement of the machine, but as it passed out of sight he began to roar with laughter.

"What yer call it, anyway?" he asked a man who was standing near by.

"Oh, that's an automobile," was the answer.

"An 'ought-ter-mobile,' is it?" replied the negro, looking wise. "Well, it strikes me that a big thing like that better be called 'ought-ter-have-a-horse,' caze it certainly acts like it's lonely." And he walked away whistling.

LIGHT BATTERIES NEEDED

Automobilism and the increasing necessity for some form of traction for goods and passengers better suited to cities than that furnished by the horse have given another impetus to the search for a storage battery that combines lightness with high output and enough mechanical and electrical strength to insure long life, says the New York Sun. Nowadays it is conceded that electricity furnishes the ideal motive power for automobiles—and no one can say how much power will be absorbed by these vehicles when the horse is only a memory—but coupled with

its great advantages are the expense, weight and untrustworthiness of storage batteries. Singularly enough, of all metals lead is the only one out of which a successful accumulator has been made, and lead is one of the heaviest of substances. As electric vehicles are now made, about one ton of vehicle is required for the accommodation and transportation of one passenger. The need for a light storage battery is sufficiently evident when this figure is kept in view.

NOTES OF INTEREST

Between January 1 and August 30 there were taken out in Belgium a trifle more than 1,500 motor vehicle licenses.

The newspapers of the country are widely copying the following paragraph, which originated in one of the New York dailies: "At the New York automobile show there was an amusing suggestiveness about the juxtaposition of three machines on the main floor. Ranged in a row there was a big truck bearing the word "Champagne" in large lettering, and the brand next to it had an ambulance and next to it a police patrol wagon."

The Automobile Club of Massachusetts is laying plans for two clubhouses, one in Boston and one of the suburbs—a sort of country home, as an objective point for runs by members of the club, together or singly.

James J. Jeffries, the champion pugilist, is the latest advocate of the motor vehicle. He anticipates no trouble in getting his New York license, inasmuch as he was a licensed engineer in California, before abandoning his calling for pugilism.

After various bickerings between those in authority, it has been decided that there will be two automobile exhibitions held in France early next year. The first will be held in January and will be the eighth annual show under the auspices of the Board of Trade of Bicycle and Automobile Manufacturers. The second will be held in February, under the

auspices of the Automobile Club of France.

Rigal has established a new motocycle record for the hour, in which time he covered 71.563 kilometers, or 44 miles 1,146 yards. The recently made English record of Jarrott for the same time stands at 42 miles 235 yards.

The council committee of Grand Rapids, Mich., has decided that the petition to limit the speed of automobiles in that city to seven miles an hour, is unreasonable and has decided to recommend a speed limit of fifteen miles an hour.

The Worcester (Mass.) Automobile Club recently held a parade. Prizes were offered for the best display and the different vehicles were resplendent with bunting and flowers. After the parade, the members of the club adjourned to a dinner.

MISCELLANEOUS

Advertisements under this head 5 cents per word, cash with order. Express orders, post office orders, or postage stamps accepted.

FOR SALE

FOR SALE—Elgin gasolene wagon; run 50 miles; cost $750; price $350; power not sufficient. FRANK MOORE, 112 N. Penn st., Indianapolis, Ind. 2

CATALOGUES PLEASE.—Wanted anything and everything good in the motor car line, viz: components and completes. WM. S. FREEMAN, dealer, Otford, Kent, England.

FOR SALE—1899 Winton in good condition; shows very little wear; machine can be seen and tried at No. 13 Monadnock Building, Chicago. D. W., agent, above address. 2

FOR SALE—The Automobile Storage and Repair Co., 57 West 66th St., New York, have new and second-hand steam, gasolene, and electric carriages constantly on hand and have always some special bargains.